

INTERFERENCE DIGEST

Interference No. 105,011

Paper No. 39

Name: Kollar

Serial No.: 08/567,564

Patent No.

Title: Preparation of Dialkyl Peroxides

Filed: 12/05/95

Interference with Daniel B. Pourreau, et al.

DECISION ON MOTIONS

Administrative Patent Judge, _____ Dated, _____

FINAL DECISION

Board of Patent Appeals and Interferences, Adverse Dated, 3/30/04
to all counts (1-3)

Court, _____ Dated, _____

REMARKS

This should be placed in each application or patent involved in interference in addition to the interference letters.

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Filed:
30 March 2004

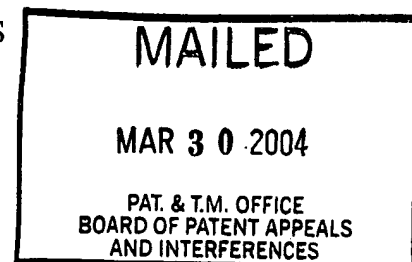
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

REDOX TECHNOLOGIES, INC.,
Junior Party,
(U.S. Application 08/567,564),

v.

DANIEL B. POURREAU, HAVEN S. KESLING, JR.
FRANK J. LIOTTA, JR. and JEFFREY M. McFARLAND
Senior Party
(U.S. Patent 5,371,298).



Patent Interference No. 105,011

Before: McKELVEY, Senior Administrative Patent Judge, and SCHAFER and TORCZON,
Administrative Patent Judges.

SCHAFER, Administrative Patent Judge.

DECISION ON PRELIMINARY MOTION

Before us for decision is Pourreau's Preliminary Motion 1 (Paper 17) asserting that all of Redox Technologies' (Kollar's) involved claims are unpatentable under 35 U.S.C. § 102(b) or 103(a). We grant the motion and hold that Kollar Claims 1-17 are unpatentable.

Pourreau's preliminary motion did not explain why the cited prior art did not also apply to Pourreau's claims. Pursuant to 37 CFR § 1.637(a), absent an explanation, the prior art is presumed to be apply to Pourreau's involved claims. Additionally, Pourreau has stated that Pourreau's claims are anticipated or obvious in light of the prior art. Paper 17, p. 1. Accordingly, we hold that Pourreau's Claims 1-7 are unpatentable as well.

I. The Parties - Findings of Fact¹

- F 1. This interference is between Kollar Application 08/567,564 and Pourreau Patent 5,371,298.
- F 2. The Kollar application is assigned to Redox Technologies, Inc. Assignment recorded at Reel/Frame 007809/0172.
- F 3. The real party in interest of the Pourreau patent is said to be Arco Chemical Technologies, LP. Paper 6.
- F 4. The Pourreau patent issued on December 6, 1994, from application 08/171,957, filed December 22, 1993.
- F 5. The Kollar application was filed December 5, 1995.
- F 6. Kollar's application was not copending with the application which issued as Pourreau's involved patent.
- F 7. By virtue of the earlier filing date, Pourreau was named the senior party.

II. Pourreau's Preliminary Motion

A. The Burden of Proof on Patentability in Interferences

In opposing Pourreau's motion, Kollar argues that patentability of an application must be proved by clear and convincing evidence:

The burden of the party asserting invalidity of a patent/application, asserting obviousness, must prove disputed facts by clear and convincing evidence.

Paper 18, pp. 3 and 11. As authority for this proposition Kollar cites Georgia Pacific Corp. v. United States Gypsum Co., 195 F.3d 1322, 1330, 52 USPQ2d 1590, 1597 (Fed. Cir. 1999) and Newell Companies, Inc. v. Kenney Mfg. Co., 864 F.2d 757, 767, 9 USPQ2d 1417, 1425 (Fed. Cir. 1988).

Pourreau replies:

The standard of proof for validity challenges in an interference is the preponderance of the evidence standard.

Paper 20, p. 1. Pourreau relies on Bruning v. Hirose, 161 F.3d 681, 686, 48 USPQ2d 1934, 1938 (Fed. Cir. 1998) as support.

Neither of the parties' citations and extremely limited commentary are particularly helpful with respect to the facts of this case.

¹ All findings of fact in this opinion, whether or not set out in numbered paragraphs, are supported by a preponderance of the evidence.

1. Analysis - Pourreau's Burden of Proof

The Patent Statute provides that, in an interference, the board “may determine questions of patentability.” 35 U.S.C. § 135(a) (emphasis added). That section did not use the words “validity” or “invalidity.” “Validity” and “invalidity” are concepts exclusively used with respect to civil actions. A patentee may file a civil action for infringement of its patent. 35 U.S.C. § 281. In the civil action, the patent is presumed valid. 35 U.S.C. § 282, first sentence. Nevertheless, a defendant may assert that a patent claim is invalid and the burden of establishing invalidity of a patent claims “shall rest on the part asserting such invalidity.” 35 U.S.C. § 282, first paragraph, last sentence. The Federal Circuit has judicially determined that the burden on a party asserting invalidity under § 282 must be shown by clear and convincing evidence. American Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 F.2d 1350, 1358-60, 220 USPQ 763, 769-71 (Fed. Cir. 1984); Ryco, Inc. v. Ag-Bag Corp., 857 F.2d 1418, 1422, 8 USPQ2d 1323, 1327 (Fed. Cir. 1988).

Both cases relied on by Kollar, like American Hoist and Ryco, are civil actions for infringement under § 281. They state the burden of proof under § 282. Thus, in Georgia Pacific the court noted:

Patents are presumed valid by statute. See 35 U.S.C. Section 282 (1994). The burden is on the party asserting invalidity to prove it with facts supported by clear and convincing evidence.

Georgia Pacific, 195 F.3d at 1329, 52 USPQ2d at 1596. Similarly, in Newell the court stated:

Our precedent holds that the disputed facts underlying the legal conclusion [of obviousness] must be established by clear and convincing evidence, not the ultimate legal conclusion of obviousness itself.

Newell, 864 F.2d at 767, 9 USPQ2d at 1425. Even the dissenting opinion in Newell noted:

The requirement of clear and convincing evidence of invalidity is grounded on the statutory presumption of validity, 35 U.S.C. § 282.

Newell, 864 F.2d at 782, 9 USPQ2d at 1437 (Newman, J. dissenting).

Thus, it is well established that a party asserting invalidity in a civil action for infringement must prove the facts by clear and convincing evidence. But this is an interference under § 135(a), not an infringement action under § 281 where an invalidity defense under § 282 is asserted. Section 135(a) uses the word “patentability” not “validity.”

The presumption of validity in § 282 has not been held to apply in proceedings before the Patent and Trademark Office involving patents. Nevertheless, an entity maintaining that a claim is

unpatentable in a proceeding in the PTO bears the burden of proving its case. An examiner's burden of proving unpatentability in a proceeding to reexamine a patent is by a preponderance of the evidence. In re Etter, 756 F.2d 852, 857-58, 225 USPQ 1, 4-5 (Fed. Cir.) (in banc), cert. denied, 474 U.S. 828 (1985). The same burden is applicable during examination of an application to reissue a patent. In re Sneed, 710 F.2d 1544, 1550 n.4, 218 USPQ 385, 389 n.4 (Fed. Cir. 1983). See also Ethicon, Inc. v. Quigg, 849 F.2d 1422, 1427, 7 USPQ2d 1152, 1155-56 (Fed. Cir. 1988). Likewise, when an examiner rejects claims in a patent application, the burden is preponderance of the evidence. In re Caveney, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed. Cir. 1985).

The Bruning case cited by Pourreau is somewhat closer to the mark. Bruning was an appeal from the decision of a panel of this board in an interference under 35 U.S.C. § 135(a). In that interference Bruning was the senior party applicant and Hirose was the junior party patentee. The applications that issued as the Hirose involved patents were copending with Bruning's involved application. The board held that certain claims of Hirose's patents had been shown to be unpatentable by a preponderance of the evidence. On appeal to the Federal Circuit, Hirose argued that the board should have required clear and convincing evidence of unpatentability. The Federal Circuit held that during an interference involving a patent issued from an application that was copending with the interfering application the appropriate standard is the preponderance of the evidence. Bruning, 161 F.3d at 686, 48 USPQ2d at 1938.

There are two significant factual differences which distinguish the facts here from those in the Bruning case: 1) The issue of unpatentability is raised against the claims of an application not the claims of a patent and 2) Kollar's application was not copending with the application that issued as Pourreau's patent.

There is no reason apparent to us for requiring a party in an interference to prove by clear and convincing evidence that a claim in its opponent's application is unpatentable. Arguments based on the presumption of validity under § 282 ("[a] patent shall be presumed valid") can have no applicability with respect to the claims of an application. Reason and common sense dictate that the party moving to prove unpatentability of claims in an application should have the same burden of proof as an examiner asserting unpatentability. It is well established that that burden is preponderance of the evidence. Sneed, 710 F.2d at 1550 n.4, 218 USPQ at 389 n.4; Ethicon, 849 F.2d at 1427, 7 USPQ2d at 1155-56; Caveney, 761 F.2d at 674, 226 USPQ at 3.

Copendency of a patent and an application involved in an interference is important. Copendency vel non determines the junior party applicant's burden of proof on priority. Where the patent and application are copending facts must be proved by a preponderance of the evidence. Bosies v. Benedict, 27 F.3d 539, 541-42, 30 USPQ2d 1862, 1864 (Fed. Cir. 1994) citing Peeler v. Miller, 535 F.2d 647, 651 n.5, 190 USPQ 117, 120 n.5 (CCPA 1976). Where the patent and application are not copending the standard is clear and convincing evidence. Price v. Symsek, 988 F.2d 1187, 1194, 26 USPQ2d 1031, 1033 (Fed. Cir. 1993). Thus, on the issue of priority, since Kollar's application was not copending with Pourreau's application, Kollar would have to meet the clear and convincing standard. The application of the clear and convincing standard in favor of a senior party patentee and against a junior party applicant has been justified, in part, by the statutory presumption of validity. The Federal Circuit in Bruning noted:

An interference involving an already issued patent embraces the societal interests derived from the statutory presumption that an issued patent is valid. These interests require a standard of proof higher than a mere, or dubious, preponderance of the evidence.

Bruning, 161 F.3d 681 at 684, 48 USPQ2d at 1937 quoting Price, 988 F.2d at 1193, 26 USPQ2d at 1036. Other reasons have also been relied upon to justify a standard higher than a preponderance. For example in Walker v. Altorfer, 111 F.2d 164, 168-69, 45 USPQ 317, 320-22 (CCPA 1940) the court expressed concerns about (1) the applicant being spurred into filing an application after seeing the issued patent and (2) the degradation of evidence after a long delay.

While the burden of proof on the issue of patentability in an interference is on a moving party (37 CFR § 1.637(a)), none of these reasons justify applying a clear and convincing standard in favor of an applicant who did not file an application until after the patent issued. If anything, it would seem that the standard should be lessened in favor of a patentee against an applicant who comes late to the game after having had a full opportunity to see and contemplate the patentee's hand. However, as pointed out in Price, there are generally three recognized standards of proof:

Three standards of proof are generally recognized, ranging from the "preponderance of the evidence" standard employed in most civil cases, to the "clear and convincing" standard reserved to protect particularly important interests in a limited number of civil cases, to the requirement that guilt be proved "beyond a reasonable doubt" in a criminal prosecution.

Price, 988 F.2d 1187 at 1191, 26 USPQ2d at 1034 quoting California v. Mitchell Bros. Santa Ana Theater, 454 U.S. 90, 102 S.Ct. 172 (1981). Preponderance of the evidence is the "lowest" standard and the one applied against applicant's in determining patentability in other proceedings in the PTO. The standard should be the same in an interference.²

We hold that a patentee asserting unpatentability of an application claim in an interference bears a burden of proving its case by a preponderance of the evidence. Thus, Pourreau bears the burden of proving the facts showing Kollar's involved claims are unpatentable by a preponderance of the evidence.

B. Patentability of Kollar's Claims

1. Findings of fact

a. Kollar's claimed subject matter

- F 8. Kollar's involved application claims methods of preparing di-alkyl peroxides.
- F 9. Some of the di-alkyl peroxides are said to be of interest because they can be used in a highly efficient process for producing ethylene glycol. Application 08/567,564, p. 2, l. 21 - p. 3, l. 6.
- F 10. Di-alkyl peroxides are a known class of compounds which may be generally represented by the formula shown below where "R'" and "R" represent the same or different primary, secondary or tertiary alkyl, cycloalkyl, aralkyl and aralkyl hydrocarbon or hetero-substituted hydrocarbon radicals and "O" represents an oxygen atom:

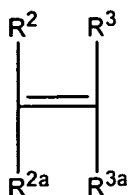


- F 11. In Kollar's claims, R' and R" are limited to C₁-C₁₀ alkyl. Application 08/567,564, specification, pp. 17-20.
- F 12. In its broadest aspects (set forth in Claim 1), the claimed process for making di-alkyl peroxides includes reacting an alkylating alcohol having the general formula

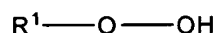
² The application of different standards for applicant's and patentees in proving unpatentability in an interference can lead to problematic, or at least curious, results. For example, in the not uncommon situation of the same prior art being raised against both the patentee's and applicant's involved claims, the applicant would have to prove unpatentability of the patentee's claims by clear and convincing evidence while the patentee would need to prove unpatentability of the applicant's claims by a preponderance as to the same claimed subject matter on the basis of the same prior art.



or an olefin having the general formula

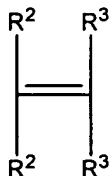


or their mixtures with a hydroperoxide having the general formula



in the presence of a substantially solid, insoluble, heterogeneous acid catalyst. Application 08/567,564, specification, p. 17.

- F 13.** In the above formulas, R, R¹ are C₁-C₁₀ alkyl and R², R^{2a}, R³ and R^{3a} are C₁-C₁₀ alkyl or hydrogen (H). Application 08/567,564, specification, p. 17.
- F 14.** Kollar Claims 2-17 narrow the scope of the process by more specifically identifying the catalyst, not specifying an alkylating alcohol as a reactant, limiting the scope of the permissible olefins, or limiting the di-alkyl peroxide to be prepared to di-tert-butyl peroxide and di-tert-amyl peroxide. Application 08/567,564, specification, pp. 17-20.
- F 15.** Kollar's claims 4 and 7 narrow the process by limiting that catalyst to be at least a 10% cross-linked acidic ion exchange resin and at least a 20% cross-linked polystyrene divinyl benzene acid resin catalyst, respectively. Application 08/567,564, specification, pp. 17-18.
- F 16.** Kollar's Claim 8 does not specify an alkylating alcohol as a reactant. Application 08/567,564, specification, p. 18.
- F 17.** Kollar Claims 11, 14 and 15 limit the olefins to those having the formula



and further requires that the catalyst be an acidic ion exchange resin (Claim 15), an at least 10% cross linked, ion exchange resin (Claim 11), or an at least 20% cross linked

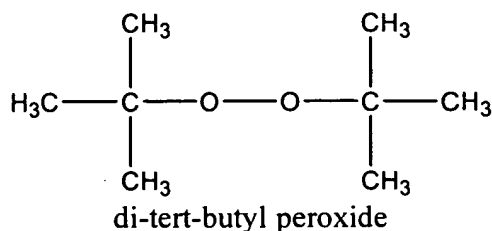
polystyrene-divinyl benzene ion exchange resin (Claim 14). Application 08/567,564, specification, pp. 19-20.

F 18. R^2 and R^3 in the above formula are defined as H or R with R being an alkyl group having up to 10 carbon atoms. Application 08/567,564, specification, p. 19.

F 19. Claim 15 also does not specify an alkylating alcohol as a reactant. Application 08/567,564, specification, p. 20.

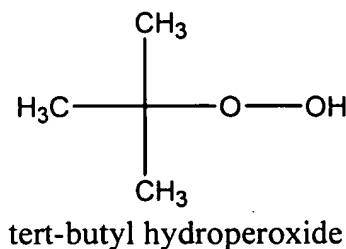
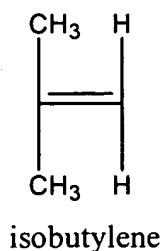
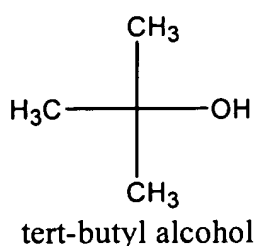
F 20. Kollar Claims 2, 5, 9, 12 and 16 are limited to preparing di-tert-butyl peroxide. Application 08/567,564, specification, pp. 17-20.

F 21. We understand di-tert-butyl peroxide may be represented by the following structural formula:



F 22. Kollar Claim 2 specifies that the alkylating alcohol be tert-butyl alcohol, the olefin be isobutylene and hydroperoxide be tert-butyl hydroperoxide. Application 08/567,564, specification, pp. 17.

F 23. We understand that tert-butyl alcohol, isobutylene and tert-butyl hydroperoxide may be represented by the following structures:

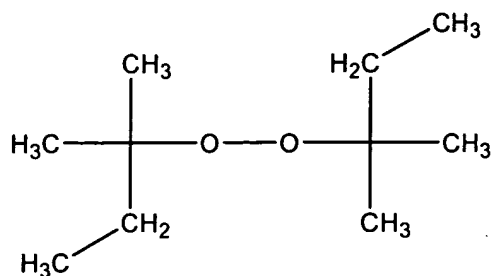


F 24. Kollar Claims 5 and 12 are essentially the same as Claim 2 but limit the catalyst to an at least 10% cross linked ion exchange resin.

F 25. Kollar Claims 9 and 16 are similar to Claim 2 but do not specify tert-butyl alcohol as a possible reactant and further limits the catalyst to an acid ion exchange resin.

F 26. Kollar Claims 3, 6, 10, 13 and 17 are limited to processes for preparation of di-tert-amyl-peroxide. Application 08/567,564, specification, pp. 17-20.

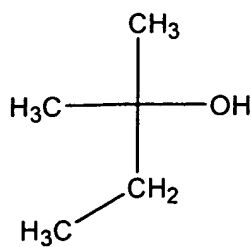
F 27. We understand that di-tert-amyl peroxide may be represented by the following structural formula:



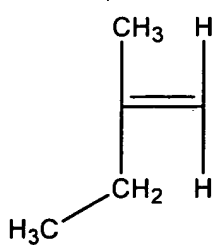
di-tert-amyl peroxide

F 28. Kollar Claim 3 specifies that the alkylating alcohol is tert-amyl alcohol, the olefin be tert-amylene and hydroperoxide be tert-amyl hydroperoxide.

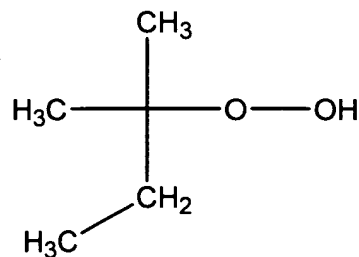
F 29. We understand tert-amyl alcohol, tert-amylene and tert-amyl hydroperoxide to have the following structures:



tert-amyl alcohol



tert-amylene



tert-amyl hydroperoxide

F 30. The process of Kollar Claims 6 and 13 is essentially the same as that of Kollar Claim 3 except that the catalyst is further limited to be an at least 10% cross linked ion exchange resin. Application 08/567,564, specification, pp. 18-19.

F 31. The process of Kollar Claims 10 and 17 are similar to that of Kollar Claim 3 but do not specify tert-amyl alcohol as a reactant and further limit the catalyst to an acidic ion exchange resin. Application 08/567,564, specification, pp. 19-20.

b. The level of ordinary skill in the art and the scope and content of the prior art

1) The McKellin Patent

F 32. McKellin is directed to methods for preparing organic peroxy compounds. PX 1002, col. 1, ll. 8-9.

F 33. We understand "peroxy compounds" to be compounds which include —O—O—.

F 34. McKellin defines "organic peroxy compounds" as including both organic di-alkyl peroxides having the formula $R-O-O-R'$ and hydroperoxides having the formula $R-O-O-H$ and PX 1002, col. 1, ll. 62-64.

F 35. McKellin also defines hydroperoxide to include both organic hydroperoxides and hydrogen peroxide ($H-O-O-H$). PX 1002, col. 1, ll. 64-66.

F 36. The McKellin patent describes the formation of organic peroxy compounds by the reaction of an organic compound and a hydroperoxide in the presence of an acid catalyst:

Briefly the process of the invention reacts, in the presence of an acid catalyst therefor, a hydroperoxide and an organic compound to produce an organic peroxy compound and water while substantially continuously distillatively removing water from the reaction zone; the water being distilled overhead in the form of an azeotrope where one or more of the organic compounds present either reactant(s) and/or reaction product(s) is the azeotropic entrainer.

PX 1002, col. 1, ll. 53-60.

F 37. The reactive organic compound may be any one which reacts with hydroperoxide to obtain an organic peroxy compound and water. PX 1002, col. 2, ll. 11-13.

F 38. Solid acidic ion exchange resins are said to be the preferred class of catalysts. PX 1002, col. 2, ll. 38-39.

F 39. The process described in the McKellin patent is stated to be most beneficial with respect to reactant/product systems where the reaction temperature is below the boiling point of water and azeotropic distillation can be carried out without exposing the system to high vacuum conditions. PX 1002, col. 2, ll. 43-50.

F 40. Such organic peroxide reactant/product systems are said to include, inter alia, aliphatic monohydric alcohols (preferably the tertiary alcohols) having not more than 10 carbon atoms; liquid alkyl hydroperoxides having not more

than 8 carbon atoms; and di-alkyl-peroxides having not more than 8 carbon atoms in each alkyl group.

PX 1002, col. 2, ll. 54-59.

- F 41. One illustrative example describes the reaction of tert-butyl alcohol and tert-butyl hydroxide in the presence of a solid acid ion exchange resin to form di-tert-butyl peroxide:

Tert-butyl alcohol and t-butyl hydroperoxide are reacted in the presence of solid sulfonic ion exchange resin to form di-t-butyl peroxide and water.

PX 1002, col. 2, l. 71 - col. 3, l. 2.

- F 42. McKellin also teaches that the solid ion exchange resin catalyst may be removed for reuse by filtration to allow further processing of the remaining reactants and products. PX 1002, col. 7, ll. 8-10.

- F 43. McKellin describes the preparation of peroxy compounds by reacting an olefin with hydrogen peroxide in the presence of a solid acidic ion exchange resin. PX 1002, col. 6, ll. 29-57.

- F 44. McKellin states:

It has been discovered that olefins such as isobutylene . . . can be treated with hydrogen peroxide in the presence of ion exchange resins to give the desired peroxides and hydroperoxides in high yield.

PX 1002, col. 6, ll. 42-45.

- F 45. McKellin's examples identify specific solid acidic ion exchange resin catalysts by the trade names Amberlite 200, Amberlyst 15 and Dowex 50X8. PX 1002, col. 2, l. 25 - col. 7, l. 2, Examples 1-11.

2) Admitted and unchallenged prior art

- F 46. The parties do not dispute that Amberlite 200 and Amberlyst 15 are solid, at least 20% cross-linked polystyrene-divinyl benzene acidic resin catalysts.

2. Anticipation

Unpatentability based on "anticipation" requires that the invention is not in fact new. See, e.g., Hoover Group, Inc. v. Custom Metalcraft, Inc., 66 F.3d 299, 302, 36 USPQ2d 1101, 1103 (Fed. Cir. 1995) ("lack of novelty (often called 'anticipation') requires that the same invention, including each element and limitation of the claims, was known or used by others before it was invented by the patentee"). Anticipation requires that a single reference describe the claimed invention with

sufficient precision and detail to establish that the subject matter existed in the prior art. See, e.g., In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990) (“the reference must describe the applicant’s claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it”). The dispositive question regarding anticipation is whether one skilled in the art would reasonably understand or infer from the prior art reference’s teaching that every claim limitation was described in that single reference. Akamai Technologies Inc. v. Cable & Wireless Internet Services Inc., 344 F.3d 1186, 1192, 68 USPQ2d 1186, 1190 (Fed. Cir. 2003); Dayco Prods., Inc. v. Total Containment, Inc., 329 F.3d 1358, 1368, 66 USPQ2d 1801, 1809 (Fed. Cir. 2003). To establish anticipation, it must be shown that a single prior art reference describes each and every limitation of a claimed invention. Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1379, 231 USPQ 81, 90 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987). The description in the reference may be either express or inherent. Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Glaxo, Inc. v. Novopharm, Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995) (for anticipation, the description need not be express, but may anticipate by inherency where it would be appreciated by one of ordinary skill in the art); RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.), cert. dismissed, 468 U.S. 1228 (1984) (anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention).

It is irrelevant for purposes of anticipation if the reference teaching the invention additionally teaches that the anticipating subject matter is sub-par. Celeritas Techs., Ltd. v. Rockwell Int’l. Corp., 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522 (Fed. Cir. 1998) (“A reference is no less anticipatory if, after disclosing the invention, the reference then disparages it. Thus, the question whether a reference ‘teaches away’ from the invention is inapplicable to an anticipation analysis.”).

When considering patentability, the “invention” under evaluation is the subject matter set out in the claims. The claims measure the invention. Teleflex, Inc. v. Ficosa North America Corp., 299 F.3d 1313, 1324, 63 USPQ2d 1374, 1380 (Fed. Cir. 2002); SmithKline Diagnostics, Inc. v. Helena Laboratories Corp., 859 F.2d 878, 882, 8 USPQ2d 1468, 1471 (Fed. Cir. 1988); SRI Int’l v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1121, 227 USPQ 577, 585 (Fed. Cir. 1985) (in banc)(plurality opinion). Stated another way, the claims provide the concise formal definition of the

invention. E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co., 849 F.2d 1430, 1433, 7 USPQ2d 1129, 1131 (Fed. Cir. 1988) quoting Autogiro Co. of America v. United States, 384 F.2d 391, 395-96, 155 USPQ 697, 701 (Ct. Cl. 1967).

While the description in the single prior art reference must meet every claim limitation, an anticipatory reference does not have to describe the full scope of the claimed invention. Thus, a description in the prior art of a single species within a claim encompassing many species is an anticipation of the claim. Titanium Metals Corp. v. Banner, 778 F.2d 775, 782, 227 USPQ 773, 779 (Fed. Cir. 1985). Similarly, a description in the prior art of any value within a claimed range is an anticipation of the range. In re Wertheim, 541 F.2d 257, 267, 191 USPQ 90, 100 (CCPA 1976). A claim is “anticipated” and unpatentable notwithstanding that it also encompasses subject matter which is not described in the reference. In other words, an anticipatory reference need only describe an embodiment which meets all the claim limitations.

In considering the scope of claims, features or benefits set out only in the specification and not required by the claims will not be read into the claims. Telecom Ltd. v. Samsung Elecs. Co., 215 F.3d 1281, 1290, 55 USPQ2d 1065, 1071-72 (Fed. Cir. 2000); Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 1186, 48 USPQ2d 1001, 1005 (Fed. Cir. 1998) (“While ... claims are to be interpreted in light of the specification and with a view to ascertaining the invention, it does not follow that limitations from the specification may be read into the claims.”). Although the specification may well indicate that certain embodiments are preferred, particular embodiments appearing in a specification will not be read into the claims when the claim language is broader than such embodiments. Electro Medical Systems, S.A. v. Cooper Life Sciences, Inc., 34 F.3d 1048, 1054, 32 USPQ2d 1017, 1022 (Fed. Cir. 1994); Specialty Composites v. Cabot Corp., 845 F.2d 981, 987, 6 USPQ2d 1601, 1605 (Fed. Cir. 1988) (“Where a specification does not require a limitation, that limitation should not be read from the specification into the claims.”). As noted by the Supreme Court:

[W]e know of no principle of law which would authorize us to read into a claim an element which is not present, for the purpose of making out a case of novelty or infringement. The difficulty is that, if we once begin to include elements not mentioned in the claim, in order to limit such claim, and avoid a defense or anticipation, we should never know where to stop.

McCarty v. Lehigh Valley R. Co., 160 U.S. 110, 116 (1895) (cited in United States v. Adams, 383 U.S. 48-49, 148 USPQ 479, 482 (1966)). Thus, to be an anticipation a reference need not teach everything present in the specification. It only requires that all the claim limitations be described. The Federal Circuit as noted that the law of anticipation

requires that a distinction be made between the invention described or taught and the invention claimed. The law of anticipation does not require that the reference “teach” what the subject patent teaches. Assuming that a reference is properly “prior art,” it is only necessary that the claims under attack, as construed . . . , “read on” something disclosed in the reference, i.e., all limitations of the claim are found in the reference, or “fully met” by it.

Kalman v. Kimberly-Clark Corporation, 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983).

The Federal Circuit has further emphasized that features described only in the specification and not required by the claims do not avoid anticipation:

The limitations on which the appellant relies . . . are not stated in the claims. Other limitations that he tries to read from the specifications into the claims are also absent from the claims It is the claims that define the claimed invention. And it is claims, not specifications, that are anticipated.

Constant v. Advanced Micro-Devices Inc., Constant v. Advanced Micro-Devices, Inc., 848 F.2d 1560, 1570-71, 7 USPQ2d 1057, 1064 (Fed. Cir. 1988).

The claims, however, are not to be treated as a mere cataloging or listing of separate parts. The limitation-to-limitation relationship of the parts must also be considered. Lindemann Maschinenfabrik v. American Hoist & Derrick Co., 730 F.2d 1452, 1459, 221 USPQ 481, 486 (Fed. Cir. 1984).

On the other hand, the absence from the reference of any claim limitation negates anticipation. Kloster Speedsteel AB v. Crucible, Inc., 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986); Atlas Powder Co. v. E. I. DuPont De Nemours, 750 F.2d 1569, 1573-74, 224 USPQ 409, 411 (Fed. Cir. 1984); Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 771-72, 218 USPQ 781, 789 (Fed. Cir. 1983).

a. Findings of Fact - Anticipation

1) Kollar Claim 1

F 47. Kollar Claim 1 specifies the following limitations:

- a. preparing a di-alkyl peroxide

- b. by reacting an alkylating alcohol for the formula ROH or an olefin of the formula $(R^2)(R^{2a})C=C(R^3)(R^{3a})$

wherein R is C₁-C₁₀ alkyl, and R² R^{2a} R³ and R^{3a} are independently selected from hydrogen and C₁-C₁₀ alkyl;

- c. with a hydroperoxide of the formula R¹OOH wherein R¹ is C₁-C₁₀ alkyl;
- d. in the presence of a substantially solid, insoluble, heterogenous acid catalyst
- e. separating the catalyst from the reaction mixture.
- F 48. McKellin describes preparing di-tert-butyl peroxide by the reaction of tert-butyl alcohol with tert-butyl hydroperoxide. PX 1002, col. 2, l. 71 - col. 3, l. 2.
- F 49. Tert-butyl peroxide described by McKellin is a di-alkyl peroxide.
- F 50. Tert-butyl alcohol described by McKellin may be represented by the formula (CH₃)₃COH and is an alkylating alcohol meeting the general formula ROH where R is (CH₃)₃C—, a C₄ alkyl.
- F 51. Tert-butyl hydroperoxide described by McKellin may be represented by the formula (CH₃)₃COOH and is a hydroperoxide meeting the general formula R¹OOH where R¹ is (CH₃)₃C—, a C₄ alkyl.
- F 52. McKellin describes that the reaction takes place in the presence of a solid sulfonic acid ion exchange resin catalyst meeting the limitation that the reaction take place in the presence of substantially solid, insoluble, heterogenous acid catalyst.
- F 53. McKellin teaches that separation of the solid ion exchange resin catalyst from reaction products by filtration (PX 1002, col. 7, ll. 7-9) thus meeting the limitation of separating the catalyst from the reaction mixture.
- F 54. The steps for the preparation of di-tert-butyl peroxide described by McKellin are related to each other in the same way the limitations of Claim 1 are related to each other.
- F 55. McKellin anticipates the subject matter of Kollar Claim 1.

2) Kollar Claim 2

- F 56. Kollar Claim 2 is dependent on Claim 1 and limits the process to the preparation of di-tert-butyl peroxide.
- F 57. Kollar Claim 2 is anticipated. Facts F 48 - F 54.

3) Kollar Claims 4, 5 and 7

- F 58. Kollar Claims 4, 5 and 7 depend from Claims 1, 2 and 1, respectively.
- F 59. Kollar Claims 4, 5 and 7 further limit the catalyst.
- F 60. Kollar Claims 4, and 5, specify that the substantially solid, insoluble, heterogenous acid catalyst to be an at least 10% cross-linked ion exchange resin.
- F 61. Kollar Claim 7 specifies that the substantially solid, insoluble, heterogenous acid catalyst to be an at least a 20% cross-linked polystyrene divinyl benzene acid resin.
- F 62. McKellin describes the use of Amberlyst 15 and Amberlite 200 ion exchange resin catalysts in examples illustrating preparations of various organic peroxy compounds.
- F 63. During a telephone conference held September 24, 2002, Kollar conceded that he would not dispute that Amberlyst 15 and Amberlite 200 were at least 20% cross-linked.
- F 64. Kollar's written description characterizes Amberlyst 15 as "a strong acid ion exchange resin of the sulfonic acid type with the type maroreticular structure that is essential for carrying out the reactions which comprise the processes of the present invention." PX 1001, p. 12, l. 1-3.
- F 65. Pourreau's argument that the commercial Amberlyst 15 and Amberlite 200 are 20% crosslinked poly styrene-divinyl benzene acidic ion exchange resin catalysts (Paper 17, p. 4) is unchallenged by Kollar.
- F 66. The description of the use of commercial Amberlyst 15 and Amberlite 200 ion exchange resin catalysts in McKellin's examples along with the description of the reaction of tert-butyl alcohol with tert-butyl hydroxide to form di-tert butyl peroxide meets the limitations of Kollar Claims 4, 5 and 7.
- F 67. McKellin anticipates the subject matter of Kollar Claims 4, 5 and 7.

4) Kollar Claims 11 and 14

- F 68. Kollar Claim 11 specifies the following limitations:
- a. preparing di-alkyl peroxide
 - b. reacting an alcohol of the formula ROH
 - c. with an organic hydroperoxide having the formula R'OOH
 - d. in the presence of an effective amount of a 10% crosslinked, ion exchange resin catalyst.

- F 69. R and R¹ are defined as being alkyl groups having 1-10 carbon atoms. Application 08/567,564, specification, p. 19.
- F 70. Kollar Claim 14 further limits the resin to an at least 20% cross-linked polystyrene divinyl benzene acid resin. Application 08/567,564, specification, p. 20.
- F 71. McKellin's disclosure of the preparation of di-tert-butyl peroxide by the reaction of tert-butyl alcohol (R in ROH is butyl having 4 carbon atoms) and tert-butyl hydroperoxide (R¹ in R¹OOH is butyl which has 4 carbon atoms) in the presence of a solid sulfonic acid ion exchange resin catalyst and the description that Amberlyst 15 and Amberlite 200 as suitable catalysts meets each limitation of Claim 11 and 14.
- F 72. McKellin anticipates the subject matter of Kollar's Claim 11 and 14.

5) Kollar Claim 12

- F 73. Kollar Claim 12 specifies the following limitations:
- a. preparing di-tert butyl peroxide
 - b. reacting tert-butyl alcohol
 - c. with tert butyl hydroperoxide
 - d. in the presence of an effective amount of a 10% crosslinked, ion exchange resin catalyst.

Application 08/567,564, specification, p. 19.

- F 74. McKellin's description of the preparation of di-tert butyl peroxide by the reaction of tert-butyl alcohol and tert-butyl hydroperoxide in the presence of a solid sulfonic acid ion exchange resin catalyst and the description that Amberlyst 15 and Amberlite 200 as suitable catalysts meets each limitation of Kollar Claim 12.
- F 75. McKellin anticipates the subject matter of Kollar Claim 12.

b. Analysis - Anticipation

Pourreau's preliminary motion asserts that the subject matter of Kollar's Claims 1, 2, 4, 5, 7, 11, 12 and 14 is unpatentable under 35 U.S.C. § 102(b) as anticipated by the McKellin patent. Kollar's Claim 1 is as follows:

A process for the preparation of a di-alkyl peroxide comprising reacting one or more members selected from the group consisting of an alkylating alcohol of the formula ROH, an olefin of the formula (R²)(R^{2a})C=C(R³)(R^{3a}) wherein R is C₁-C₁₀ alkyl, and R², R^{2a}, R³, and R^{3a} are independently selected from

hydrogen and C₁-C₁₀ alkyl; with a hydroperoxide of the formula R¹OOH wherein R¹ is C₁-C₁₀ alkyl; in the presence of an effective amount of a substantially solid, insoluble, heterogenous acidic catalyst; followed by separation of the reaction mixture from said catalyst.

Application 08/567,564, specification, p. 17.

Pourreau specifically relies on the McKellin's disclosure of the preparation of di-tert-butyl peroxide by the reaction of tert-butyl alcohol and tert-butyl hydroperoxide in the presence of a solid sulfonic acid ion exchange resin catalyst. PX 1002, col. 2, l. 72 - col. 3, l. 2. Tert-butyl peroxide described by McKellin is at di-alkyl peroxide. Tert-butyl alcohol may be represented by the formula (CH₃)₃COH and is an alkylating alcohol meeting the general formula ROH where R is (CH₃)₃C—, a C₄ alkyl. Tert-butyl hydroperoxide may be represented by the formula (CH₃)₃COOH and is a hydroperoxide meeting the general formula R¹OOH where R¹ is (CH₃)₃C—, a C₄ alkyl. McKellin says the reaction takes place in the presence of a solid sulfonic acid ion exchange resin catalyst. This meets the requirement of Claim 1 that the reaction taking place "in the presence of an effective amount of a substantially solid, insoluble heterogeneous acidic catalyst." Thus, the preparation described by McKellin at PX 1002, col. 2; l. 72 - col. 3, l. 2 meets all the steps to Kollar's Claim 1 except the final step of separating the reaction mixture from the catalyst. McKellin however teaches that separation of the ion exchange resin catalyst from reaction products by filtration. PX 1002, col. 7, ll. 7-9. Thus, Kollar's Claim 1 reads on the process taught by McKellin, and is therefore unpatentable under 35 U.S.C. § 102(b).

Kollar's Claim 2 is dependent on Claim 1, but is limited specifically to the formation of di-tert-butyl peroxide made by the reaction of tert-butyl alcohol or isobutylene with tert-butyl hydro peroxide. As explained above, this is the exact process taught by McKellin. PX 1002, col. 2, l. 71 - col. 3, l. 2. Claim 2 is anticipated and unpatentable under § 102(b) for the same reasons as Kollar Claim 1.

Kollar's Claims 4, 7, 11 and 14 narrow the scope of the method set out in Claim 1 by limiting the catalyst to either an at least 10% cross-linked ion exchange resin (Claims 4 and 11) or to an at least 20% cross-linked polystyrene divinyl benzene acidic resin.³ The McKellin patent does not

³ Claims 11 and 14 also narrow the scope of the olefin which optionally may be reacted with the hydroperoxide. However, as the olefin is an alternative and not a required reactant, narrowing the scope of the olefin component does not affect our finding on anticipation of these claims.

expressly describe the properties of the "solid sulfonic acid ion exchange resin" catalyst used to form di-butyl-peroxide. However, the McKellin patent provides detailed examples which describe the use of commercial ion exchange resins having the trade designation Amberlyst 15 and Amberlite 200. The parties do not contest that Amberlyst 15 and Amberlite 200 are solid sulphonic 20% cross-linked polystyrene divinyl benzene ion exchange resins. While none of those examples are directed to the specific preparation of di-butyl-peroxide by reacting tert-butyl alcohol and tert-butyl hydroperoxide, the reactions described in the examples are sufficiently close to the former reaction so as to put one having ordinary skill in the art in possession of the use Amberlyst 15 and Amberlite 200 as suitable catalyst for carrying out the preparation of di-tert-butyl peroxide described by McKellin at col. 2, l. 72 - col. 3, l. 2. In this regard we note that Pourreau specifically relied on the commercial resins in arguing anticipation and Kollar's opposition did not challenge the correctness of that argument. Nor did Kollar rely on the properties of the catalyst in anyway to distinguish his claimed method of preparation from the preparations described by McKellin. (Paper 18)

Kollar Claims 5 and 12 further limit the method of Claim 1 by (1) limiting the preparation to di-tert-butyl peroxide made by the reaction of tert-butyl alcohol or isobutylene with tert-butyl hydroperoxide and (2) further limiting the catalyst to an at least 10% cross-linked ion exchange resin. As we indicated above, McKellin expressly teaches the preparation of di-tert-butyl peroxide by the reaction of tert-butyl alcohol with tert-butyl hydroperoxide in the presence of a solid sulfonic acid ion exchange resin. For the reasons stated in the paragraph immediately above, we find that McKellin's disclosure of the use of Amberlyst 15 and Amberlite 200 with a variety of similar reactions puts one having ordinary skill in the art in possession of the use of those commercial catalysts for production of di-tert-butyl peroxide.

Kollar's Claims 1, 2, 4, 5, 7, 11, 12 and 14 are anticipated by the McKellin patent and are unpatentable.

3. Obviousness

Section 103(a) of Title 35 provides:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to

which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The determination of obviousness under § 103(a) requires consideration of the factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1 (1966): (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of nonobviousness. McNeil-PPC, Inc. v. L. Perrigo Co., 337 F.3d 1362, 1368, 67 USPQ2d 1649, 1653 (Fed. Cir. 2003). There must be some suggestion, teaching, or motivation arising from what the prior art would have taught a person of ordinary skill in the field of the invention to make the proposed changes to the reference. In re Fine, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

A methodology for the analysis of obviousness was set out in In re Kotzab, 217 F.3d 1365, 1369-70, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000, citations omitted):

A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher."

Most if not all inventions arise from a combination of old elements. Thus, every element of a claimed invention may often be found in the prior art. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference.

The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved. In addition, the teaching, motivation or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references. The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. Whether the Board relies on

an express or an implicit showing, it must provide particular findings related thereto. Broad conclusory statements standing alone are not "evidence."

To this methodology we would add only that it must also be shown that one having ordinary skill in the art would reasonably have expected any proposed changes to a prior art reference would have been successful. Amgen, Inc. v. Chugai Pharmaceutical Co., 927 F.2d 1200, 1207, 18 USPQ2d 1016, 1022 (Fed. Cir. 1991); In re O'Farrell, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988); In re Clinton, 527 F.2d 1226, 1228, 188 USPQ 365, 367 (CCPA 1976). "Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure." In re Dow Chem. Co., 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988).

a. Kollar Claims 3, 6 and 13

1) Findings of fact - Obviousness - Kollar Claims 3, 6 and 13

- F 76.** The process of Kollar Claims 3, 6 and 13 specifies the product to be di-tert-amyl peroxide and the reactants as tert-amyl alcohol or tert-amylene, and tert-amyl hydroperoxide.
- F 77.** The processes of Kollar Claims 3, 6 and 13 are the "tert-amyl" analogs of the "tert-butyl" processes of the Kollar Claims 2, 5 and 12.
- F 78.** The difference between the subject matter of Kollar Claims 3, 6 and 13 and McKellin is that McKellin does not expressly teach the preparation of di-tert-amyl peroxide by the reaction of either tert-amyl alcohol or tert-amylene with tert-amyl hydroperoxide
- F 79.** Tert-amyl alcohol and tert-amyl hydroperoxide have five carbon atoms and di-tert-amyl peroxide has five carbon atoms in each alkyl group.
- F 80.** The reaction of tert-amyl alcohol with tert-amyl hydroperoxide to form di-tert-amyl peroxide is a reaction within the scope of McKellin's generic teaching for preparing organic peroxy compounds as including

aliphatic monohydric alcohols (preferably the tertiary alcohols) having not more than 10 carbon atoms; liquid alkyl hydroperoxides having not more than 8 carbon atoms; and di-alkyl-peroxides having not more than 8 carbon atoms in each alkyl group.

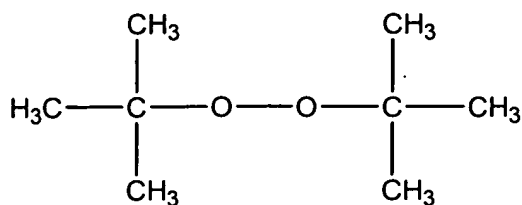
PX 1002, col. 2, ll. 54-59.

- F 81.** Di-tert-amyl peroxide is an adjacent homolog of di-tert-butyl peroxide.
- F 82.** Tert-amyl alcohol, tert-amylene, and tert-amyl hydroperoxide are the next adjacent homologs to tert-butyl alcohol, isobutylene and tert-butyl hydroperoxide, respectively.

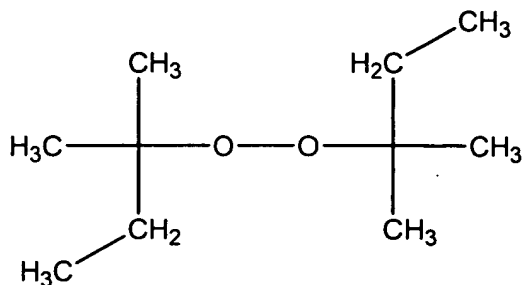
2) Analysis - Obviousness - Kollar Claims 3, 6 and 13

Kollar Claims 3, 6 and 13 are limited to the preparation of di-tert-amyl hydroxide by the reaction of tert-amyl alcohol or tert-amylene with tert-amyl hydroperoxide. The claims differ in scope from each other in the recitation of the catalyst. In Claim 3, the reaction must be carried out in the presence of a substantially solid, insoluble, heterogenous acid catalyst. In Claims 6 and 13 the catalyst is more narrowly stated in requiring that the catalyst being an at least 10% cross-linked ion exchange resin.

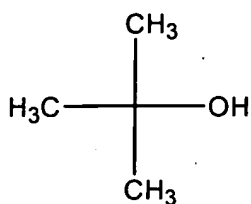
As we detailed above, McKellin describes the formation of di-tert-butyl peroxide by the reaction of tert-butyl alcohol and tert-butyl hydroperoxide in the presence of a substantially solid, insoluble heterogeneous 10% cross-linked acid ion exchange resin catalyst. Kollar's Claims 3, 6 and 13 differ in requiring the preparation of tert-amyl peroxide from tert-amyl alcohol and tert-amyl hydroperoxide. Tert-butyl peroxide, tert-amyl peroxide, tert-butyl hydroxide, tert-amyl hydroperoxide, tert-butyl alcohol and tert-amyl alcohol are known compounds and may be represented by the following structures:



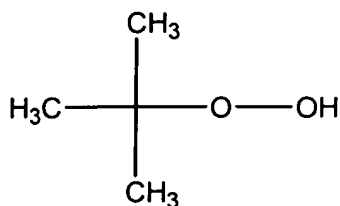
di-tert-butyl peroxide



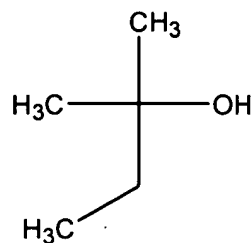
di-tert-amyl peroxide



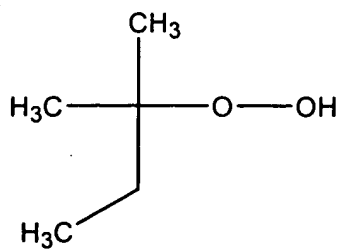
tert-butyl alcohol



tert-butyl hydroperoxide



tert-amyl alcohol



tert-amyl hydroperoxide

As can be seen from a comparison of the above chemical structures, the “tert-amyl” product and reactants, respectively, are the adjacent homologs of the “tert-butyl” product and reactants. One having ordinary skill organic peroxide arts would expect that tert-amyl reactants to have similar properties, and thus react similarly to their tert-butyl homologs. McKellin’s generic teaching of the formation of organic di-peroxy compounds of the form ROOR’ by the reaction of a hydroperoxide with organic compounds including monohydric alcohols (which may be represented by the formula ROH) (PX 1002, col. 1, l. 53- col. 2, l. 33) coupled with the express teaching of the preparation of tert-butyl peroxide from the “tert-butyl” reactants (PX 1002, col. 2, l. 71 - col. 3, l. 7) suggests that the closely related tert-amyl peroxide would be formed by the analogous reaction. “Structural similarity, alone, may be sufficient to give rise to an expectation that compounds similar in structure will have similar properties.” In re Merck & Co., Inc., 800 F.2d 1091, 1096, 231 USPQ 375, 379 (Fed. Cir. 1986) quoting In re Payne, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979). For obviousness under §103, all that is required is a reasonable expectation of success. In re Longi, 759 F.2d 887, 897, 225 USPQ 645, 651-52 (Fed. Cir. 1985); Clinton, 527 F.2d at 1228, 188 USPQ at 367. The motivation to prepare di-tert-amyl peroxide comes from McKellin’s generic disclosure coupled with the specific teachings relating to the homologous tert-butyl compounds. Thus, McKellin teaches illustrative reactants and products include:

aliphatic monohydric alcohols (preferably the tertiary alcohols) having not more than 10 carbon atoms; liquid alkyl hydroperoxides having not more than 8 carbon atoms; and di-alkyl-peroxides having not more than 8 carbon atoms in each alkyl group.

PX 1002, col. 2, ll. 54-59. Tert-amyl-alcohol, tert-amyl hydroperoxide and di-tert-amyl peroxide have 5 carbon atoms in each alkyl group, thus meeting McKellin’s description of suitable reactants and products. This generic teaching coupled with McKellin’s express teaching of the reaction of tert-butyl alcohol with tert-butyl hydroperoxide to form di-tert-butyl peroxide provides the suggestion to prepare the di-tert-amyl peroxide from the tert-amyl homologs. The subject matter of Kollar’s Claims 3, 6 and 16 would have been obvious.

b. Obviousness - Kollar Claims 8-10 and 15-17

1) Obviousness - Findings of Fact

F 83. Kollar’s Claims 8-10 and 15-17 require that the di-alkyl peroxide be prepared by a reaction system that includes an olefin and a hydroperoxide.

F 84. McKellin teaches that di-alkyl peroxides can be prepared by the reaction of an olefin with hydrogen peroxide in the presence of ion exchange resins:

It has been discovered that olefins such as isobutylene and 2-methyl-butene-2 can be treated with hydrogen peroxide in the presence of ion exchange resins to give the desired peroxides and hydroperoxides in high yield.

PX 1002, col. 6, ll. 42-45.

F 85. McKellin notes that any olefin having 3 or more carbon atoms may be used but prefers those having 4-12 carbon atoms:

Any olefin may be the feed to the process which has at least three carbon atoms; The secondary olefins such as isobutylene, are a preferred feed and preferably those having 4-12 carbon atoms.

PX 1002, col. 6, ll. 46-50.

F 86. McKellin teaches that ion exchange resin is an acidic solid ion exchanger resin that "may be any of those hereinbefore set forth." PX 1002, col. 6, ll. 55-57.

F 87. The "hereinbefore set forth" ion exchange resins include Amberlyst 15 and Amberlite 200. PX 1002, col. 3, l. 25 - col. 6, l. 27, Examples 1-9.

F 88. McKellin's preferred olefins, i.e, those having 4-12 carbon atoms, include isobutylene (four carbons) and isoamylene (five carbons).

F 89. McKellin does not expressly teach forming di-alkyl peroxides, generally, or di-butyl peroxide or di-amyl peroxide, specifically by the reaction of an olefin and an organic hydroperoxide.

F 90. The parties state that the preparation of di-alkyl peroxides by the reaction of olefins such as isobutylene or 2-methylbut-2-ene with an organic hydroperoxide such as tert-butyl hydroperoxide is known in the art. Kollar Application 08/567,764, specification (PX 1001), p. 1, ll. 23-25; Pourreau Patent 5,371,298 (PX 1003), col. 1, ll. 19-21.

F 91. The parties both state that the preparation of di-tert-butyl peroxide by the reaction of the olefin isobutylene and hydrogen peroxide is known in the art. Kollar Application 08/567,764, specification, p. 1; Pourreau Patent 5,371,298 (PX 1003), col. 1, ll. 23-25.

F 92. One having ordinary skill in the art would recognize that alkyl hydroperoxides and hydrogen peroxides are alternative reactants with olefins to form di-alkyl peroxides.

2) Analysis -Obviousness - Kollar Claims 8-10 and 15-17

These claims require the use of an olefin as a reactant with a hydroperoxide. McKellin describes the preparation of peroxy compounds by the reaction of an olefin with hydrogen peroxide. PX 1002, col. 6, ll. 29-57. McKellin, thus differs from the subject matter of Claims 8-10 and 15-17 in not expressly describing the use of a hydroperoxide as a reactant with an olefin to form a di-alkyl peroxide. The record shows that the level of skill in the art includes the recognition that the hydroperoxides and hydrogen peroxides are alternative reactants with olefins in forming di-alkyl peroxides. Thus, the specification of Kollar's involved application acknowledges:

The preparation of di-alkyl peroxides by the reaction of an olefin such as 2-methylbut-2-ene with an organic hydroperoxide such as TBHP [(tert-butyl hydroperoxide)] is also known. See Davies, et al., J. Chem. Sec. page 2200, 1954. Also French patent 1,555,308 shows the reaction of isobutylene with hydrogen peroxide to produce TBHP and ditertiary butyl peroxide.

PX 1003, col. 1, ll. 19-25 (bracketed material added). Pourreau's involved patent has a similar acknowledgment:

The preparation of di-alkyl peroxides by the reaction of an olefin such as isobutylene with an organic hydroperoxide such as tBHP is also known. See Davies, et al., J. Chem. Sec. page 2200, 1954. Also French patent 1,555,308 shows the reaction of isobutylene with hydrogen peroxide to produce tBHP and di-tert-butyl peroxide.

PX 1001, p. 1, ll. 23-28. One having ordinary skill in the art would have recognized that hydroperoxides, such as tert-butyl hydroperoxide, were an alternative to hydrogen peroxide in the preparation of di-alkyl peroxides for olefins. It would, therefore, have been obvious to substitute the appropriate hydroperoxide for hydrogen peroxide in McKellin's olefin process. The motivation to make this substitution and a reasonable expectation of success comes from the recognition by the person having ordinary skill in the art that hydrogen peroxide and organic hydroperoxides are alternative reactants with olefins for forming di-tert-alkyl peroxides.

4. Kollar's arguments

Kollar argues that Pourreau's motion takes McKellin's teachings out of context, ignores McKellin's motivation and does not apply proper legal standards of patentability. Paper 18, pp. 1-3 and 10-11. Kollar specifically argues:

Pourreau's facts are individual utterings and fabricated by Pourreau that ignore patentability standards set by law. They are individual utterings that ignore context and the teachings and motivation of McKellin '163.

Paper 18, p. 1 Kollar, however, never says what was taken out of context, what the proper context is or provided evidence as to how one having ordinary skill in the art would have understood the McKellin reference.

Kollar further argues that the identification of each individual part claimed is not sufficient to defeat patentability. Paper 18, p. 4. Paper 18, pp. 3-4 and 9. However, where each claimed limitation is described in the prior art in the same relationship claimed, the claims are anticipated. Where there are differences between the prior art and the claimed subject matter but the prior art and the level of ordinary skill in the art suggests making the changes then the subject matter as a whole would have been obvious. For the reasons stated above, the McKellin patent describes subject matter within the scope of Kollar Claims 1, 2, 4, 5, 7, 11, 12, and 14 and renders subject matter within the scope of Kollar Claims 3, 6, 8-10, 13, and 15-17 obvious.

Kollar argues that Pourreau has failed to identify any motivation, teaching or suggestion of making the specific combination claimed by Kollar. Paper 18, p. 11. We do not see the relevance of McKellin's motivation (or Kollar's for that matter) to the anticipation issue. Subject matter encompassed by Kollar Claims 1, 2, 4, 5, 7, 11, 12 and 14 is described in McKellin. The issue for anticipation is whether each and every limitation of the Kollar's claims is described in McKellin. (Hybritech, 802 F.2d at 1379, 231 USPQ at 90) and whether those limitations are taught to have the same relationship to each other as specified in Kollar's claims (Lindemann, 730 F.2d 1452 at 1459, 221 USPQ at 486.) As we detailed above, McKellin describes each of the required steps of Kollar Claims 1, 2, 4, 5, 7, 11, 12 and 14. In the process taught by McKellin each of the steps have the same relationship to each other as the steps in Kollar's claimed method.

With respect to unpatentability under § 103(a), Kollar argues that McKellin's teachings "would discourage, indeed eliminate, the motivation and broad based utility manifest in the Kollar application." Paper 18, p. 12. Kollar is apparently arguing that in order to prove unpatentability, the prior art must describe the applicant's motivation, reasons or utility. However, in order to establish a prima facie case, the prior art need only provide motivation to do what the applicant has claimed. In re Dillon, 919 F.2d 688, 693, 16 USPQ2d 1897, 1902 (Fed. Cir. 1990); In re Kemps, 97 F.3d 1427, 1430, 40 USPQ2d 1309, 1311 (Fed. Cir. 1996). With respect to the production of tert-amyl peroxide, the motivation comes from McKellin's generic teaching, the close structural similarity between the tert-butyl and tert-amyl homologues and the expectation that similar

compounds will behave similarly. With respect to the preparation of tert-alkyl peroxides by the reaction of an olefin and a hydroperoxide, the motivation flows from the knowledge of a person having ordinary skill in the art that hydrogen peroxide and organic hydroperoxides are alternative reactants with olefins in the preparation of di-tert-alkyl peroxides.

Kollar also argues that the invention is an improvement and therefore will share many features with the prior art (Paper 18, pp. 3-4 and 9) and that the identification of each individual part claimed is not sufficient to defeat patentability (Paper 18, p. 4). However, where each and every claim limitation is shared with, i.e., described in, a single prior art reference in the same relationship as in the claims, the claim is anticipated. With respect to obviousness, the mere disclosure in the prior art of every limitation is not sufficient. However, when the prior art additionally suggests and provides motivation to do what the applicant claims, the claimed subject matter is obvious. We have described above the motivation to produce di-tert-amyl peroxide and to form di-tert-alkyl peroxides by the reaction of an olefin and a hydroperoxide.

Kollar argues that the claimed subject matter demonstrates improvements which confer advantageous performance or characteristics and makes the invention a true advance in the art:

It is the realization and implementation [sic] of these fine points which when they produce an improved result which confers unique performance or characteristics such as a true new commercial utility which provides some motivation, suggestion or teaching of the desirability of making the specific combination that makes it a patentable advance in the art.

Paper 18, p. 4. In this regard we note that Kollar's claims are not in the form authorized for claiming improvements. See 37 CFR § 1.75(e). In any event, Kollar's claims do not expressly identify any beneficial results. Kollar's claims do not specify any results beyond obtaining a di-tert-alkyl peroxide. The claims do not set out any "fine points." They merely broadly claim a reaction environment shown to be known or obvious. Kollar has not directed us to the claim limitations which would necessarily result in improved results or unique performance or characteristics over the prior art. Kollar's claims do not recite any process parameters which would patentably distinguish Kollar's claimed subject matter from the processes described in the prior art. Kollar's written description may identify process parameters or even "fine points" which might lead to improvements. Anticipation, however, does not require that the prior art teach everything that the specification teaches. Constant, 848 F.2d at 1570-71, 7 USPQ2d at 1064; Kalman, 713 F.2d at 772, 218 USPQ at 789. It is the language of Kollar's claims which specifies what Kollar regards as his

invention (35 U.S.C. § 112, ¶ 2) and it is inappropriate to read limitations appearing only in the written description into the claims. Telecom, 215 F.3d at 1290, 55 USPQ2d at 1071-72; Comark 156 F.3d at 1186, 48 USPQ2d 1001 at 1005. Additionally, Kollar has not directed us to any convincing evidence showing that the claimed process has unexpected advantages over the prior art.

Kollar argues that patentability must be determined according to the thinking of one of ordinary skill in the art guided by the prior art references and the accepted wisdom in the field. Paper 18, p. 4. Kollar, has not directed us to any credible evidence establishing “the wisdom in the field” which we should consider. Nor has it been explained how the wisdom in the field would provide a different understanding of the teachings of the McKellin patent.

Kollar argues that the McKellin patent describes techniques not required by Kollar’s claims. Kollar asserts:

McKellin always teaches using low temperatures and azeotropic water removal from a hydrogen peroxide source, including hydrogen peroxide derived hydroperoxides, in water forming peroxide reactions, such as with an alcohol, tBA, reactant.

McKellin always teaches and claims using low temperatures and hydrogen peroxide with olefins to yield hydroperoxides. McKellin never teaches or claims reacting olefins with hydroperoxides to produce (di-alkyl) peroxides.

Paper 18, p. 5. More specifically, Kollar argues that a key inventive or essential feature of the McKellin invention is water removal by means of azeotropic entrainment (Paper 18, pp. 7 and 11); that all of McKellin’s teachings including the examples are effected at 40°C or below (Paper 18, pp. 8 and 11-12); that each of McKellin’s teachings relating to the use of olefins are effected at 10° C or lower (Paper 18, p. 9); that all of McKellin’s teachings relating to the use of olefins use hydrogen peroxide as a reactant and do not use a hydroperoxide (Paper 18, pp. 8 and 11); that all of McKellin’s teachings are effected with high cost hydrogen peroxide including sequentially used hydrogen peroxide derived hydroperoxides such as tert-butyl hydroperoxide (Paper 18, pp. 8 and 11); that water has a negative influence preparation of hydroperoxides and peroxides (Paper 18, p. 11); that McKellin teaches using alcohol as a reactant only under “water removal” processing conditions under low temperature, low productivity conditions and then only with hydrogen peroxide or hydrogen peroxide derived hydroperoxide (Paper 18, p. 12).

None of these factors distinguish Kollar’s claimed subject matter for the simple reason that Kollar’s claims do not exclude them. Kollar submitted his claims as “particularly pointing out and

distinctly claiming the subject matter which [Kollar] regards as his invention.” 35 U.S.C. § 112, ¶ 2. Kollar’s claims specify a process for preparation of di-alkyl peroxide “comprising” the reaction of either the specified alcohols or olefins with specified hydroperoxides in the presence of specified catalyst and separation of the reaction mixture from the catalyst. The use of the word “comprising” following the preamble allows the claims to cover subject matter which is not expressly recited. Stiftung v. Renishaw PLC, 945 F.2d 1173, 1178, 20 USPQ2d 1094, 1098 (Fed. Cir. 1991). There is nothing in Kollar’s claims which excludes the use of azeotropic mixtures, limits the amount of water present, requires the use of any particular temperature or specifies the characteristics of the hydroperoxide used. Kollar’s claims simply do not exclude any of the factors cited to distinguish the claimed subject matter from McKellin

Kollar also attempts to distinguish the claimed invention from McKellin asserting that “Kollar always effects reaction directly without water removal, always operates at much higher . . . temperatures and utilizes low cost isobutane produced hydroperoxide Paper 18, p. 12. Kollar alleges that his invention avoids the following problems (Paper 18, p. 10):

1. use of low temperature operation;
2. dewatering;
3. hydrogen peroxide sourcing of peroxides including tert-butyl hydroperoxide;
and
4. the need for complete conversion of hydrogen peroxide.

Kollar also argues that methods such as described by McKellin are uneconomic when “non traditional, stoichiometric or quasistoichiometric deployment of peroxides, tBHP [(tert-butyl hydroperoxide)] and/or DtBP [(di-tert-butyl peroxide)]” is involved. Paper 18, pp. 6-7 (bracketed text added).

Again Kollar’s claims do not exclude water removal, low temperature operation, use of dewatering, hydrogen peroxide sourcing of peroxides or the complete conversion of hydrogen peroxide. Nor are Kollar’s claim limited to “non traditional, stoichiometric or quasistoichiometric deployment of peroxides, tBHP and/or DtBP” It is Kollar’s claims, not his specification, which must distinguish the invention from the prior art. To the extent Kollar’s written description describes these “deployments,” it is inappropriate to read limitations appearing only in the written description into

the claims. Telecom, 215 F.3d at 1290 , 55 USPQ2d at 1071-72; Comark 156 F.3d at 1186, 48 USPQ2d 1001 at 1005.

Kollar further argues that the McKellin patent includes two inventions –one directed to “alcohol reactants as alkylating agents of hydrogen peroxide and hydrogen peroxide derived hydroperoxides” while the second is directed to “olefins reactants as alkylating agents for hydrogen peroxide.” Page 18, p. 7. Kollar also argues that a stated object of the McKellin patent is a process of making a hydroperoxide by reacting olefins and hydrogen peroxide and all of McKellin’s claims are directed to this process (Paper 18, p. 8).

Prior art under 35 U.S.C. § 102(b) includes what is described in a U.S. patent, not merely what is claimed. Section 102(b) states in relevant part (emphasis added):

A person shall be entitled to a patent unless—

* * * * *

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States.

The McKellin reference is a printed publication as well as a patent. While the claims of the McKellin patent determines what infringes the patent, the claims do not determine or limit what the patent “describes.” In re Benno, 768 F.2d 1340, 1346, 226 USPQ 683, 686 (Fed. Cir. 1985). With respect to Kollar Claims 1, 2, 4, 5, 7, 11, 12, and 14, McKellin describes a preparation of di-tert-butyl peroxide which meets all the limitations of those claims. With respect to Kollar Claims 3, 6, 8-10, 13, and 15-17, methods within the scope of those claims would have been obvious.

Kollar urges that the invention is said to be an acknowledged improvement patent application (Paper 18, p. 9); that invention is directed and motivated by economic factors to make di-alkyl peroxides, especially di-tert-butyl peroxides, for use in low cost applications (Paper 18, p. 9); that the invention is motivated by the need for massive low cost di-alkyl peroxide and costs are a critical and legitimate parameter in establishing innovation and real utility (Paper 18, p. 9); that the key enabling features of Kollar’s invention are said to be the direct uncomplicated use of low cost reactants including the non-traditional hydrogen peroxide derived hydroperoxide, in a high conversion, highly selective, and high production rate process, with simple catalyst removal and minimal after processing (Paper 18, p. 9); that the improvements of the Kollar invention are said to create “unique, broadly expanded commercial utility” (Paper 18, p. 9); that the Kollar invention provides lower total fixed capital, lower operating costs, lower raw material costs, optional use of

low cost crude tert-butyl alcohol, and the optional use of ethylene glycol process derived isobutylene (Paper 18, p. 10); and that the Kollar application teaches "improvements which transform di-alkyl peroxide from a very minor specialty chemical to a potentially massive broad based versatile commercial chemical and fuel." Paper 18, p. 12.

Again Kollar's invention is defined by the claims, not by the specification. The claims do not require any of the above listed features. Nor has it been shown that the claims necessarily result in any of the alleged benefits. Additionally, Kollar has not directed us to any evidence which would demonstrate that the Kollar's invention, as broadly claimed, would achieve these benefits while the process described by McKellin would not.

Kollar also states that "[a]t most, the Kollar claims may require minor modification" Paper 18, p. 12. We understand this statement to be a request to allow Kollar to amend his claims if they are held unpatentable. It is now too late for Kollar to amend his claims. The rules governing interferences provide for filing a preliminary motion to amend application claims. 37 CFR § 1.633(c)(2). Such a motion may also be filed in response to an opponent's preliminary motion that some or all the applicant's involved claims are unpatentable. 37 CFR § 1.633(i). During the conference call held September 24, 2002, Kollar indicated that he would not file any preliminary motions. Pourreau indicated that only one preliminary motion would be filed. As a result, an abbreviated schedule was set to address Pourreau's preliminary motion. Paper 13, p. 2. After seeing Pourreau's motion and evidence, Kollar never sought authorization to file a preliminary motion under 37 CFR §§ 1.633(i) and 1.633(c)(2) to amend his claims. Such a motion could have been filed as a motion contingent upon the grant of Pourreau's motion. The procedures in interference are designed to efficiently and promptly address all issues in the interference. Interferences are to be conducted "to secure the just speedy, and inexpensive determination of every interference." 37 CFR § 1.601. The reasons for efficiency and promptness are self evident. Additionally, Kollar, as an applicant, could be entitled to additional patent term for the time the application was involved in this interference. 35 U.S.C. § 154 (b)(1)(C). To allow Kollar to file a preliminary motion to amend his claims at this late date would unjustifiably extend the duration of this interference. Kollar has not even indicated how he would amend the claims. It is now too late for Kollar to file such a motion.

III. Patentability of Pourreau's involved claims

We hold that Kollar's Claims 1-17 are unpatentable under either 35 U.S.C. § 102(b) or § 103(a). The rules governing interferences specify that:

If a party files a motion for judgment under § 1.633(a) against an opponent based on the ground of unpatentability over prior art, and the dates of the cited prior art are such that the prior art appears to be if a party files a motion for judgment under § 1.633(a) against an opponent based on the ground of unpatentability over prior art, and the dates of the cited prior art are such that the prior art appears to be applicable to the party, it will be presumed, without regard to the dates alleged in the preliminary statement of the party, that the cited prior art is applicable to the party unless there is included with the motion an explanation, and evidence if appropriate, as to why the prior art does not apply to the party applicable to the party, it will be presumed, without regard to the dates alleged in the preliminary statement of the party, that the cited prior art is applicable to the party unless there is included with the motion an explanation, and evidence if appropriate, as to why the prior art does not apply to the party.

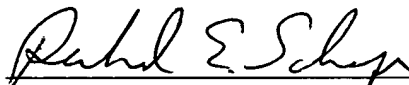
37 CFR § 1.637(a) Pourreau's preliminary motion does not explain why the prior art relied upon is not equally applicable against Pourreau's involved claims. Pourreau has also stated that Pourreau's claims are anticipated or obvious in light of the same prior art applied against Kollar. Paper 17, p. 1. Accordingly, we hold that Pourreau's involved Claims 1-7 are unpatentable as well.

IV. Conclusion

Pourreau's Preliminary Motion 1 (Paper 17) seeking a judgment that Kollar's Claims 1-17 are unpatentable is granted. By operation of 37 CFR § 1.637(a) Pourreau's Claims 1-7 are also unpatentable. Since neither party has patentable claims to form the basis for the formulation of an appropriate count for contesting priority, it is not appropriate or possible to proceed to the priority phase. A judgment is being issued contemporaneously with this decision holding that the parties are not entitled to the subject matter of their respective involved claims.



FRED McKELVEY)
Senior Administrative Patent Judge)



RICHARD E. SCHAFER)
Administrative Patent Judge)



RICHARD TORCZON)
Administrative Patent Judge)

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The opinion in support of the decision is not binding precedent of the Board.

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Paper

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Filed:
30 March 2004

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

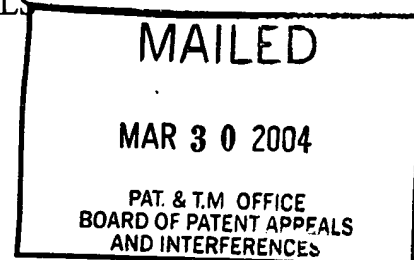
REDOX TECHNOLOGIES, INC.,

Junior Party,
(U.S. Application 08/567,564),

v.

DANIEL B. POURREAU, HAVEN S. KESLING, JR.
FRANK J. LIOTTA, JR. and JEFFREY M. McFARLAND

Senior Party
(U.S. Patent 5,371,298).



Patent Interference No. 105,011

Before: McKELVEY, Senior Administrative Patent Judge, and SCHAFER and TORCZON,
Administrative Patent Judges.

SCHAFER, Administrative Patent Judge.

JUDGMENT - RULE 640

A panel of the Board has issued a decision holding all of the parties' involved claims unpatentable over prior art. Paper 21. Without any patentable claims there is no basis upon which to form a count suitable for determining priority and, therefore, no basis for proceeding to the priority phase of the interference. Accordingly, it is appropriate to enter judgment against both parties at this time.

It is

ORDERED that judgment as to the subject matter of Counts 1, 2 and 3 (Paper 1, p. 5) is awarded against Junior Party, REDOX TECHNOLOGIES, INC.;

FURTHER ORDERED that junior party, REDOX TECHNOLOGIES, INC., is not entitled to a patent containing claims 1, 4, 7, 8, 11, 14, and 15 (corresponding to Count 1); claims 2, 5, 9, 12, and 16 (corresponding to Count 2); or Claims 3, 6, 10, 13, and 17 (corresponding to Count 3) of Application 08/567,564;

FURTHER ORDERED that judgment as to the subject matter of Counts 1, 2 and 3, is awarded against the senior party, DANIEL B. POURREAU, HAVEN S. KESLING, JR., FRANK J. LIOTTA, JR. and JEFFREY M. McFARLAND;

FURTHER ORDERED that senior party, DANIEL B. POURREAU, HAVEN S. KESLING, JR., FRANK J. LIOTTA, JR. and JEFFREY M. McFARLAND, is not entitled to a patent containing claims 1, 4, and 5 (corresponding to Count 1); claims 2 and 6 (corresponding to Count 2); or Claims 3 and 7 (corresponding to Count 3) of Patent 5,371,298;

FURTHER ORDERED that if there is a settlement agreement and it has not already been filed, attention is directed to 35 U.S.C. § 135(c) and 37 CFR § 1.661; and

FURTHER ORDERED that a copy of the DECISION ON PRELIMINARY MOTION (Paper 21) and this JUDGMENT (Paper 22) be assigned paper numbers and be placed in the files of Patent 5,371,298 and Application 08/567,564.

McK
_____)
FRED McKELVEY)
Senior Administrative Patent Judge)
Richard E. Schaffer
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